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Article Summary: Early Czech farmers in Nebraska used the construction techniques of their Central European ancestors. Meticulous execution characterizes their carpentry.

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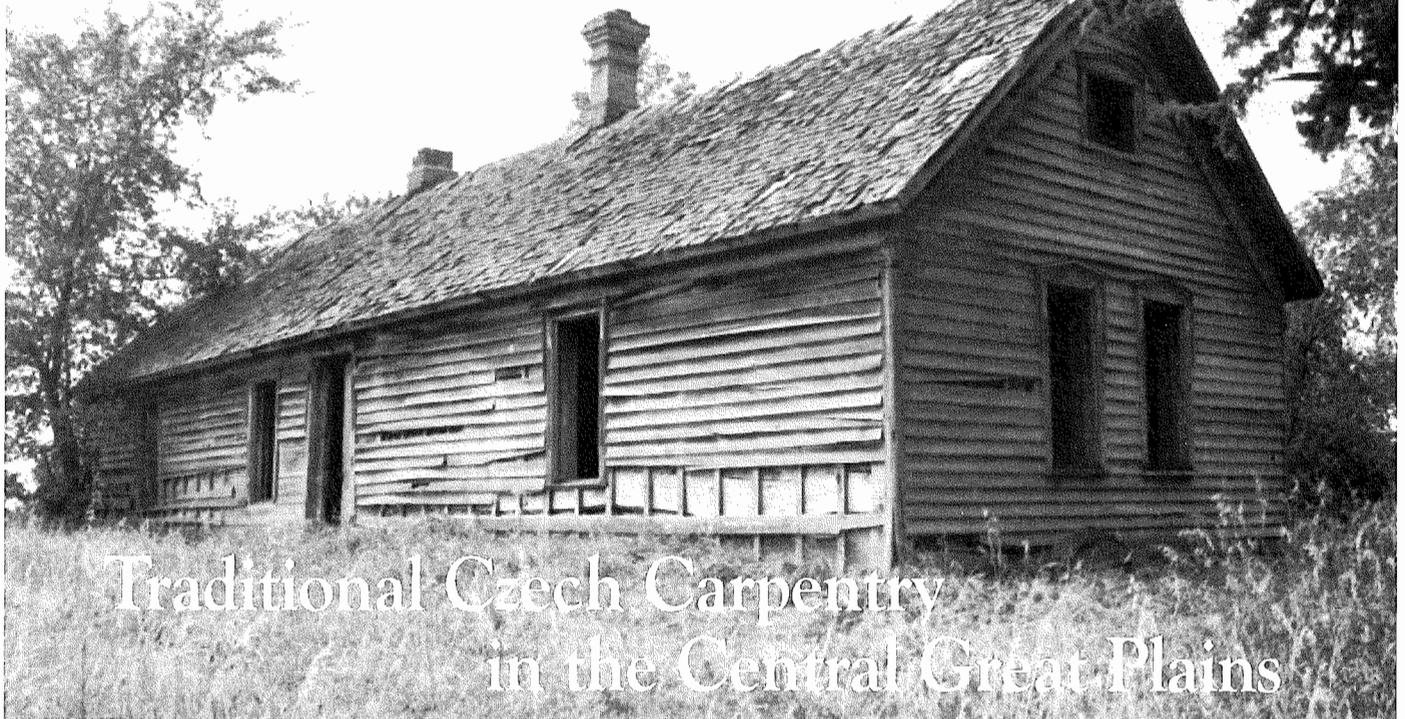
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Photographs / Images: Fig 1. Tomek horizontal timber house, Verdigre; Fig 2. Czech-American timber shaping and corner timbering diagrams; Fig 3. map of Central Europe, showing the area historically characterized by horizontal timber construction; Fig 4. map of the east-central Plains of Nebraska and South Dakota, showing the locations of Czech-American horizontal timber structures consulted for this study; Fig 5. detail of the Skala house, now at Battle Creek; Fig 6. detail of the Máršl double-crib barn, Knox County; Fig 7. detail of the Wampol house, now in Tabor, South Dakota; Fig 8. detail of the Šrajjer-Dryák house, Pischel Creek; Fig 9. detail of the Veselý house, Knox County; Fig 10. detail of the Eckstein-Buresh house, Saunders County; Fig 11. diagram of roof-framing variations in Czech-American timber buildings; Fig 12. detail of the Veselý house, Knox County; Fig 13. floor plan of the Růžička house, Knox County; Fig 14. photo of the Růžička house; Fig 15. photo of the Veselý house, Knox County; Fig 16. detail of the Veselý house; Fig 17. detail of the Tabor School, Tabor, South Dakota; Fig 18. detail of the Máršl double-crib barn, Knox County; Fig 19. detail of the Kounovský smokehouse, Knox County; Fig 20. photo of the Hrbek stable, Knox County; Fig 21. photo of the Kounovský timber house, Knox County; Fig 22. detail of the Kounovský house; Fig 23. photo of a horizontal timber house in the Czech Republic; Fig 24. interior view of the Eckstein-Buresh house, Saunders County; Fig 25. interior detail of the Šrajjer-Dryák house, Pischel Creek; Fig 26. photo of a second generation house on the Mladý farm, Pishelville

OLD CUTS IN NEW WOOD



By David Murphy

Among the building practices brought to the Plains by nineteenth century immigrants, some suggest themselves for particular attention because of their exquisite execution. Such is the case for the traditional carpentry of Czech settlers. Their constructions contrast with similar American practices brought here from the Midland, Southern, and Midwestern regions, which were in decline at the time of the Czech introductions.¹ In this regard, the Czech buildings tell quite different stories (Fig. 1).

The carpentry subject here is the form of horizontal framing commonly called log building. Studies of American constructions have a long and varied past, having analyzed, described, and interpreted them from a number of points of view and a wide range of

inclusiveness. Acknowledging the widespread use of horizontal timber framing in Europe, many of the best American studies have focused either on culturally related groups of buildings, often with attention to both the source technology and American adaptations, or they have focused upon detailed analysis of specific aspects of technical systems.²

After heterogeneous non-timber-building cultures adopted the technique and spread it throughout the United States, the manifestations of log building became so complex as to raise nearly insurmountable difficulties in interpretation. Studies of buildings related only by artificial boundaries, such as in states or counties, typically have only enumerated variations on specific aspects of the technology rather than explaining whole buildings as parts of a construction system.³ This essay will focus on one culturally related group of

buildings with the intention of explaining their construction in terms of a coherent system.

Horizontal frame buildings are constructed as a system of several components together with joinery techniques. Rather than focus on wall construction alone, it is more useful to think in terms of the entire structure—everything necessary to raise and support the whole building—so that we see it as an integral system. Real buildings that lack systematic integration often prove structurally unsound.

Fig. 1. The Tomek horizontal timber house, Verdigre vicinity, front gable and side entrance, seen from the original entrance lane. This is the only example of a three-room house having two log pens separated by a light wood-frame infill. Timber framing is visible where siding is missing.
D. Murphy, NSHS RG1763-7608/25:33

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Traditional Czech Carpentry in the Central Great Plains

The principal component of horizontal framing is the wall timber itself. Logs cut from the main trunks of trees are prepared into timbers in various ways: left in the round, either retaining or, more often, stripped of their bark; planked or hewn flat on opposing faces (usually intended for the inside and outside faces of the wall); or completely hewn to create a square, rectangular, or multifaceted timber. In old European source areas many timber sections were known, but in America the former two shapes were the most common (Fig. 2). Occasionally relatively thin timbers called planks were used, and these were often but not always sawn.

Other common components include beams (or tie beams), joists, rafters, door and window jambs, and interior partitions. In the old framing traditions these members were prepared from wood cut near the site; as modernity flourished in America imported milled lumber began to replace some of the hand-crafted components. Beams, for example, were eliminated in favor of lumber joists.

The manners in which the components were joined to create the structure has been the subject of intense interest and study, which typically has focused on the joinery of the main wall timbers where the most diversity of expression is evident. European culture developed many ways of performing this function, called corner timbering, or notching. Notches were cut at or near the end of each timber, on the top and the bottom, in such a manner as to allow the next adjacent timber of each wall to rest securely upon the one below (Fig. 2).

True notches were cut so the timbers were locked into place; that is, they could not be displaced horizontally without first being lifted vertically or rotated out of place. Gravity is the locking force inherent in this type of notch. This locking was accomplished in three different ways. In the most sophisticated, each surface of the notch provided inherent locking. One example is the full dovetail, where each of

its two surfaces is cut so that it slopes in two directions with respect to the grain of the wood (Fig. 2a). Therefore, the notch was locked prior to the placement of the next course of timbering. Various toothed notches and vertical double notches are also true notches.

A second form of notching occurs where the lock is made after the next course of timber is laid. Each surface of the notch is sloped in one direction

to hold it in place (Fig. 2f).

Timbering is also distinguished by the fashion in which the corners are finished. Boxed corners cut the ends of the timbers flush with the face of the wall so the end of the notch is revealed, creating a neat, (usually) ninety-degree corner. Timbers that extend beyond the corners use notches that have crowns; the notch is fully contained *within* the timber rather than being revealed at

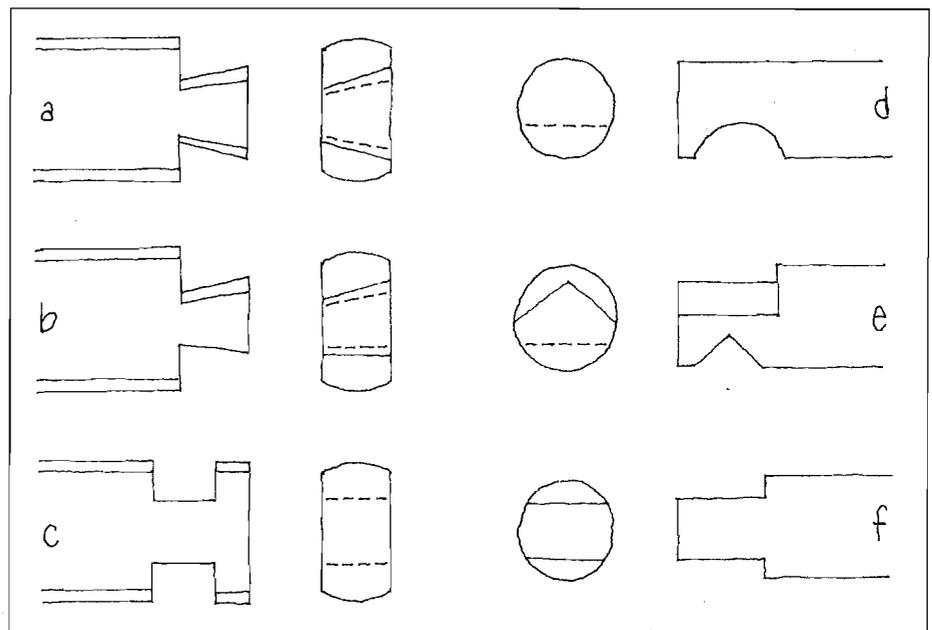


Fig. 2. Czech-American timber shaping and corner timbering: a–c, planked timbers; d–f round timbers. a) full dovetail; b) unilateral or half-dovetail, a Czech variant used with full dovetailing; c) vertical double notch; d) saddle notch; e) V-notch; f) square notch.
D. Murphy

with respect to the grain. When the timber is laid into place, it locks only in one direction; the lock in the second direction is made only after the next timber is laid into place. American half-dovetails and V-notches (Fig. 2e) are examples of this kind of locking.

Crowned notches represent the third kind of locking (see below). In contrast, false notches do not lock. They therefore have less structural integrity, though the combined weight of all the timbers in a wall will tend to keep them in place.⁴ The American square notch is one example, which often was spiked

the ends (see Fig. 2c). Crowned notches are usually true notches. Yet another kind of corner-timbering system, variously called panel-wall, post-and-panel, corner-post, *pièce-sur-pièce*, Hudson Bay, or Red River framing, is constituted without notches; in this case the horizontal timbers are let into mortised or composite vertical posts at the corners, and often also at intermediate locations in the wall.

The American tradition of log building as it spread across the continent was constituted primarily upon four notch types—the half dovetail, saddle, square,

and V-notch. Though more complex joints such as the full dovetail were dominant in the original source areas of American horizontal timber framing, settlers lacking cultural connection with timbering traditions adopted only the simpler techniques. Later, and farther west, traditional log buildings constructed by Europeans with old associations to the technology typically re-introduced sophisticated joinery. No evidence suggests that others in their locales adopted the more complex techniques.

Czech settlers in the Upper Midwest and Great Plains states provided one of the new introductions of refined horizontal timber construction. It derived from a centuries-old technology that emanated, as near as we now know, from source areas of log construction centered in south-central and east-central Europe. Over many centuries the technology spread until it was being utilized in virtually all the forested regions of Europe, from present-day Poland and Russia through Finland, Sweden, and Norway (Fig. 3).⁵

During its spread the technology developed distinct techniques that became characteristic of each place, revealing a rich mosaic of provincial diversity.

Within the historic Czech lands horizontal timber construction was venerated for centuries, with early evidence dating from the eighth through the twelfth centuries. Its widespread use was fairly well established by the fourteenth century and remained popular into the twentieth century throughout most of Bohemia, western and northern Moravia, and all of Moravian Silesia (Fig. 3). Within this tradition a variety of terms were developed to describe each of the associated components and techniques. Each timber in a wall had its own designation, deriving from its position and function.⁶ While Czech emigrants brought only the most fundamental forms of the structural system to the Plains, the

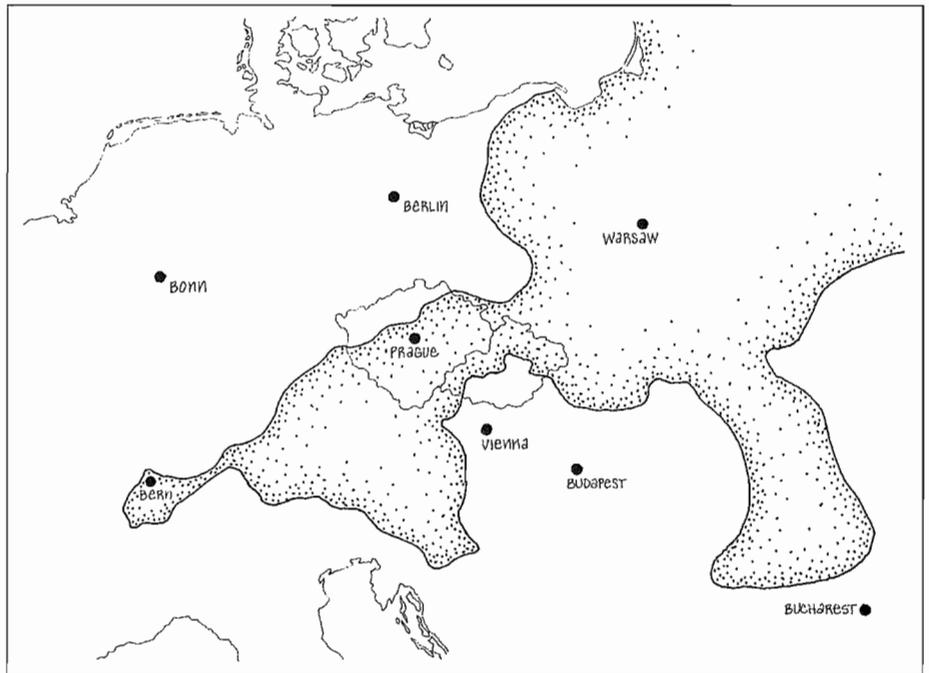


Fig. 3. Central Europe, showing the Czech lands of Bohemia and Moravia, including Moravian Silesia, and the area historically characterized by horizontal timber construction. D. Murphy, after Václav Mencl, *Lidová architektura v Československu* (Prague: Vydala academia 1980), fig. 1372

system nevertheless reveals an integral sophistication that sets it apart from other log construction in America. This system was built primarily upon the two-sided hewing of timbers, full-dovetail corner timbering, wall chinks, tie beams, mortised-post door and window jambs, common rafter roofs with collar beams, and interior timber dividing walls. Subsidiary systems, used especially for minor outbuildings, added diversity to this fundamental structural expression.

It is no surprise that Czechs building with horizontal timbers here all came from areas in the Old Country where the tradition was strong (Fig. 3). The question of why more did not build with timber can be answered in part by the relative scarcity of wood in the central Plains, though numerous other timber buildings may once have existed, which would likely indicate greater spatial distribution than we can discern from those still standing. The vast

majority of the timber buildings in Nebraska exist in settlements that were established in areas whose ecosystems supported substantial presettlement riparian or oak woodlands, the most numerous being in areas with oak woodlands.⁷

This is likely true for the South Dakota settlements as well (see Fig. 4). With the exception of the large Big Nemaha Basin settlement in Pawnee and Richardson counties and in Saline County, Czech settlements with substantial woodlands all built with timber.⁸ Constructions not near wooded areas indicate that timber was often hauled some distance, reinforcing the veneration Czechs often had for this material. In some cases, such as the construction of timber houses on the treeless plains of Fillmore County, this veneration was reinforced to the extreme with the long-distance importation of milled timbers for building purposes.⁹

Traditional Czech Carpentry in the Central Great Plains

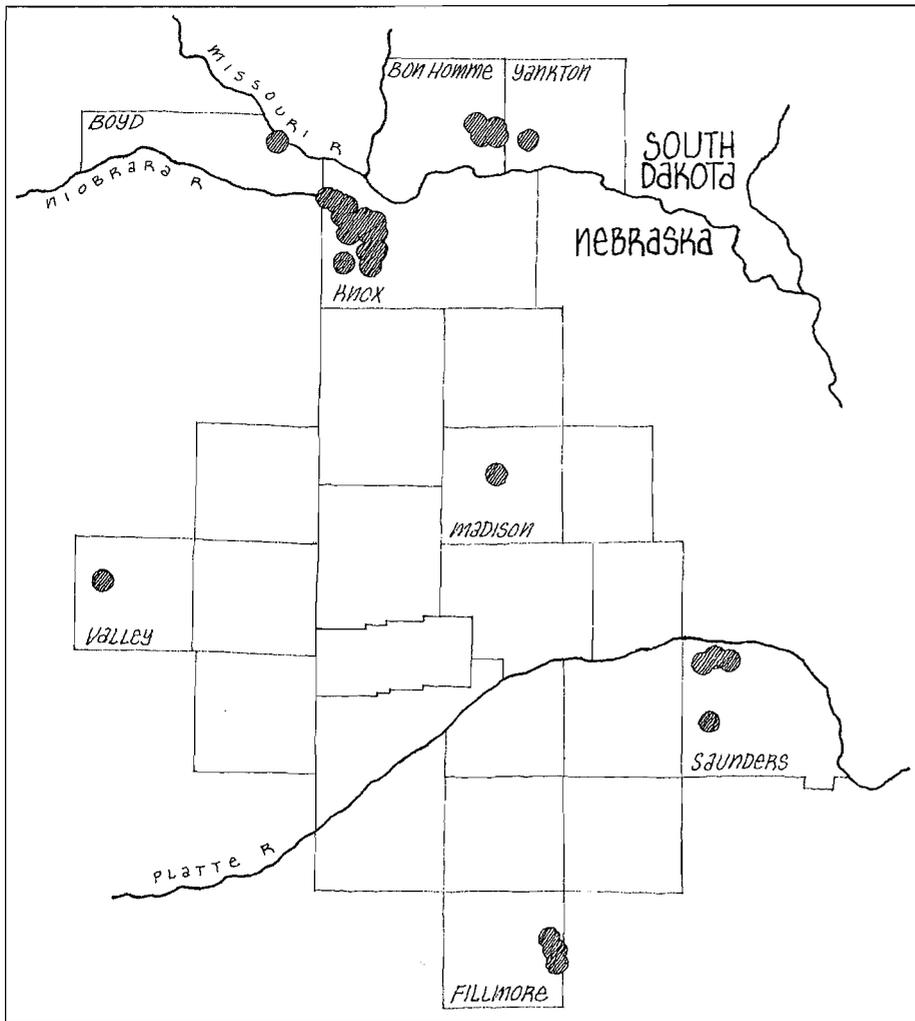


Fig. 4. The east-central Plains of Nebraska and South Dakota, showing the locations of Czech-American horizontal timber structures consulted for this study. D. Murphy

We can expect a rather complex system of timbering from a people with a venerated tradition of the technology. While the timbering technology used on the central Plains was simplified compared to the European system—in part due to the more modest size of original constructions here—considerable complexity is still evident. The Czech system has two principal variants—one of planked, the other of round timbers—with timbering subvariants for each. An example of a predecessor framing system is also extant, and it is included for the context

it provides for later construction.

Josef Skala built a relict of the very old system of horizontal timbering near the Battle Creek in Madison County, Nebraska, in the 1860s. It was built from oak, probably procured from the Elkhorn River, about ten miles to the north. The system is of a type known as *drážková konstrukce*, or “post-and-panel” construction. It is believed to have Slavic origins and moved into the Czech lands with the Slavic tribes. It was used extensively into the medieval period, when it was superseded by the advanced full-dovetail construction for

which Czech carpenters are renowned.¹⁰ The ancient adoption of dovetailing accounts for the extremely rare occurrences of the post-and-panel method in the Czech lands today; its earlier predominance is known primarily from archeological evidence.¹¹

The system is similar to, yet distinct from, the better-known corner-posting systems that French and German settlers brought to the United States. The Czech version differs by the use of thin planks set within a post-and-beam frame (Fig. 5). While the others use horizontal timbers of a thickness equal to the posts, the Czech planks are thinner than the posts; Skala’s measure 8.5 cm, compared to 20 cm for the square posts.

While corner-notched, plank-wall framing is known in this country, it is rare; the Skala structure is the only plank-walled building of any kind recorded in Nebraska, Czech or otherwise. Skala’s planks are hewn on all four faces, and are set in the wall without chink spaces. The walls also support tie beams that were part of the original roof structure.

The methods of joinery used in this building reinforce the distinctiveness. The posts are mortised lengthwise to the thickness of the planks, which are let into the posts. At the top of the wall an additional mortise is cut through the posts, which receive tenons cut on the ends of the top planks (Fig. 5). These were then pegged into place, tying the whole structure together. While the tenoning technique itself is simple, this structure is tied in a way quite different from other recorded corner-post buildings in Nebraska. Another unique mortise is visible twice on the entrance corner near the storage room door. Appearing as a dovetail-like mortise, the original rails that attached here are missing. This mortise is known as the *úplné přeplátování s celou rybinou*, translating descriptively as a “counter-sunk, full-dovetail lap joint.” These joints possibly held support timbers for an original roof extension along



Fig. 5. Corner detail of the post-and-panel construction of the Skala house, now at Battle Creek, showing the connections at the plate. D. Murphy, NSHS RG1763-7908/3:7



Fig. 6. Detail of the corner timbering of the hewn timber crib of the Mářšl double-crib barn, Knox County, showing the slightly splayed full-dovetail notches. D. Murphy, 8511-5

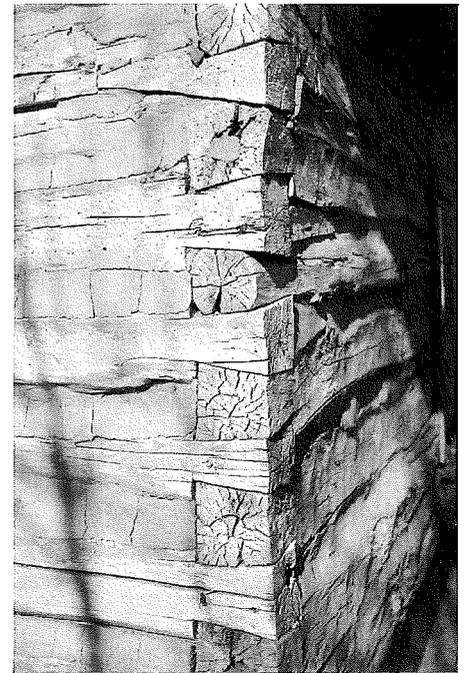


Fig. 7. Detail of the full-dovetail corner timbering in the Wampol house, now in Tabor, South Dakota. D. Murphy, 8511-12

the entrance wall eaves.

The system that replaced post-and-panel construction was well established in Czech villages by the fourteenth century and was still popular at the time of the emigration to America. The new method was structurally superior to the old, being based upon the actual fitting or interlocking of cross-timbers at the corners without the use of vertical posts. This overlapping (*přeplátování*) or notching formed the basis of the new horizontal framing, known as *roubená konstrukce* or *roubený*. In the Czech lands this primary timbering system was identical with sophisticated cabinet-makers' corners; known as *rybina*, the refined, multiplanar, trapezoidal surfaces of the notches form a complex and sturdy corner joint. It is known in America as the full-dovetail notch (Fig. 2a). When executed by skilled carpenters, the notch will perform when cut with only the slightest of slopes to its surfaces. Czechs did this routinely; many

full-dovetail notches in planked timber walls can be mistaken for square notches because of the slight slope, while others are quite pronounced (cf. Figs. 6, 7).

The timbers of the new system were also different from the post-and-panel use of planks. Heavy timbers, about 15–20 cm wide, were used, and while some were hewn on all four sides and placed one atop the other without the use of chinks, the new horizontal frame typically used the corner notches to space the beams in the wall so they *just* rested upon each other without hewing either the tops or the bottoms. Sometimes this technique created a narrow space or chink between the wall beams, or sometimes the beams would touch along part of their length, leaving a space along another part. The chinks often appear wider than they actually are because of the way the timbers were prepared. Most Czech timbers were slabbed only on two sides—the finished inner and outer wall surfaces—

while the top and bottom sides were left in the round; the indentations in the assembled wall left by the curved upper and lower parts of the logs, at the wall surface, were packed with small wood poles or staves and mud to a finish flush with the slabbed surfaces. This gave a wider appearance than was represented by the chink space itself.¹² At least one Nebraska building used small wooden pegs as lath to hold the mud chinking in place (Fig. 8).¹³

Czech interior partition walls were always built of slabbed timbers mortised through the exterior walls to solidify the structure. Sometimes the connection was cut as a true notch, such as a full dovetail, V, or half-V,¹⁴ but more often it was a simple mortise, like a square notch. This practice was also continued in the Plains where it, like the dovetail notches, distinguished Czech carpentry from similar American forms of the technology (Fig. 9).

Likewise, Czechs built door and

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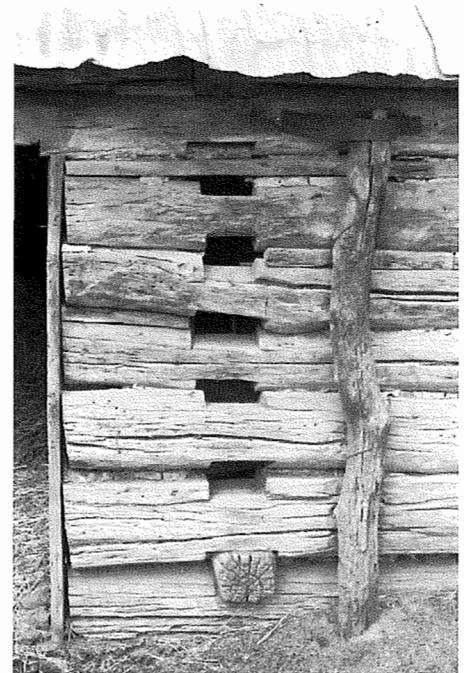


Fig. 8. Detail of the chinking in the Šrajer-Dryák house, Pischel Creek, showing the shape of the logs, the remnant clay and wood chinking, and the wedge-shaped pegs used to “lath” the clay in place. The view is through a gap in the siding, and shows a furring strip. D. Murphy, NSHS RG1763-8804/2:4

Fig. 9. Detail of the through-wall notching for the interior partition walls in the Veselý house, Knox County. John Carter, NSHS RG1763-8010/7:4

window jambs of heavy timbers mortised to accept tenoned wall timbers in a manner reminiscent of the old post-and-panel technique (Fig. 10). Another variant, seen in the Tomek house in Knox County, Nebraska (Fig. 1), was the use of substantial wooden dowels between each log near the jambs; lumber jambs were then spiked into the ends of each log, a standard American practice also adopted by some Czechs.

The roof structure was an integral part of the framing system, both traditionally and in the hybrid systems developed in the American context. Tie beams (*vazný trám*) were primary members that locked over or into the plate logs to stabilize the structure across its width. These also served as ceiling joists and loft floor beams (*stropnice*). The beams also supported the common rafter roof—often with collar beams (*hambálek*)—either mortised directly into the top of the

beams, or atop the beam over an intervening false plate called the *okapová vaznice* (Figs. 10, 11a–b). Alternatively the rafters could simply rest on the false plate and slide beyond it to extend the eave overhang, though none of this latter method have been recorded on the Plains.

While the roof system in the Old Country was composed of heavy rafters, on the Plains Czechs adopted American dimensional lumber without exception for all of the structure above the beams. The old system of mortising the collar beam into the rafters was replaced with an American version that simply nailed collars to the rafters, or eliminated them altogether because of the narrow width of the building. In the Czech lands the roof itself consisted of widely spaced heavy lathes or battens (*lať*) secured to the rafters, to which thatching or slate, tile, or split-wood shingles were attached. The materials available here for roofing—typically wooden shingles on

narrowly-spaced sheathing—generally required more closely-spaced rafters to be effective, which led to an overall early shift in roof structuring above the plate.

As a result, most Czechs hybridized the roof structure early, replacing the beams with evenly spaced lumber joists mortised through the timber wall with a single timber above (creating a diminutive knee wall) to hold the joists in place. Most simply used the top log as the plate, or spiked a lumber plate to the top log (Figs. 11c–d, 12). Joists were spaced more or less according to American practice, the spacing being equal to that used for the roof rafters.

The roof was finished in the usual way with light wood shingles. Similarly, the heavy decking (*poval*) above the beams, used to support thick clay insulation, was replaced here with sheathing or shiplap boards that served both as finish ceiling below and finish floor above, if left uninsulated.



Fig. 10. Ekstein-Buresh house, Saunders County. View of the main entrance inside the mud porch showing the mortised-post door frame and the protruding tie beams. The common rafter for the main roof can be seen connecting into the top of the nearest beam at the top of the photograph, while the rafters for the shed-roofed mud porch are spiked to the side of the beams. Remnants of mud plastering and whitewash are also visible. D. Murphy, 8008-2

Some Czechs also hybridized the main floor structure—especially if there was to be a cellar below—by eliminating the use of earthfast sleepers (*polštář*) in favor of dimensional lumber joists mortised into or attached to

the sill timber. Some followed older practice by resting the joists on the ground.

As befits traditional cultural systems, horizontal timber framing was

used to create a variety of building types; these were constructed according to patterns with provincial preferences, and with considerable variation on the patterns within the provinces. Provincial patterns are discernable to the keen observer in the central Plains, though there are too few examples extant to pursue these distinctions.¹⁵ Owing in part to the small scale of framed buildings here—no double-pile (*dvoutrakt*) constructions of timber were built—we can just as well relate the Plains buildings to the paradigmatic central Bohemian traditional house (*Středočeský dům*), which formed the basis for most of the Czech provincial traditions.¹⁶

All three of the traditional, single-pile house plans were built in frame on the central Plains; all were open plans allowing direct entry into the heart of the house, and were one-room-wide plans either one, two, or three rooms deep (Fig. 13).¹⁷

The one-room plan (*jednokomorový dům*) consisted only of the main room of the larger quintessential house, and was a square or rectangular chamber that functioned as the whole house. This room was called the *světnice*, or in English-American tradition, the “hall.” The first building episode of the Eckstein-Buresh house in Saunders County, Nebraska, exemplifies this type, while the Kavan house in the same county represents a variation. The presence of a very narrow entrance, cooking, and/or storage chamber (*síň*) attached to this large room provided dwelling space for the essential cottager’s house—the *chalupa*, or *dvojdílný dům*. The sole horizontal frame example of this type still standing in the central Plains—a variation—is the post-and-panel house of Josef Skala.¹⁸

The three-room plan is the prototypical *Středočeský dům*—or descriptively, the *trojdílný dům*—which includes, in addition to the two previously mentioned rooms, a small rectangular storage and sleeping chamber at the back called the *komora*. The Růžička house on the Niobrara River

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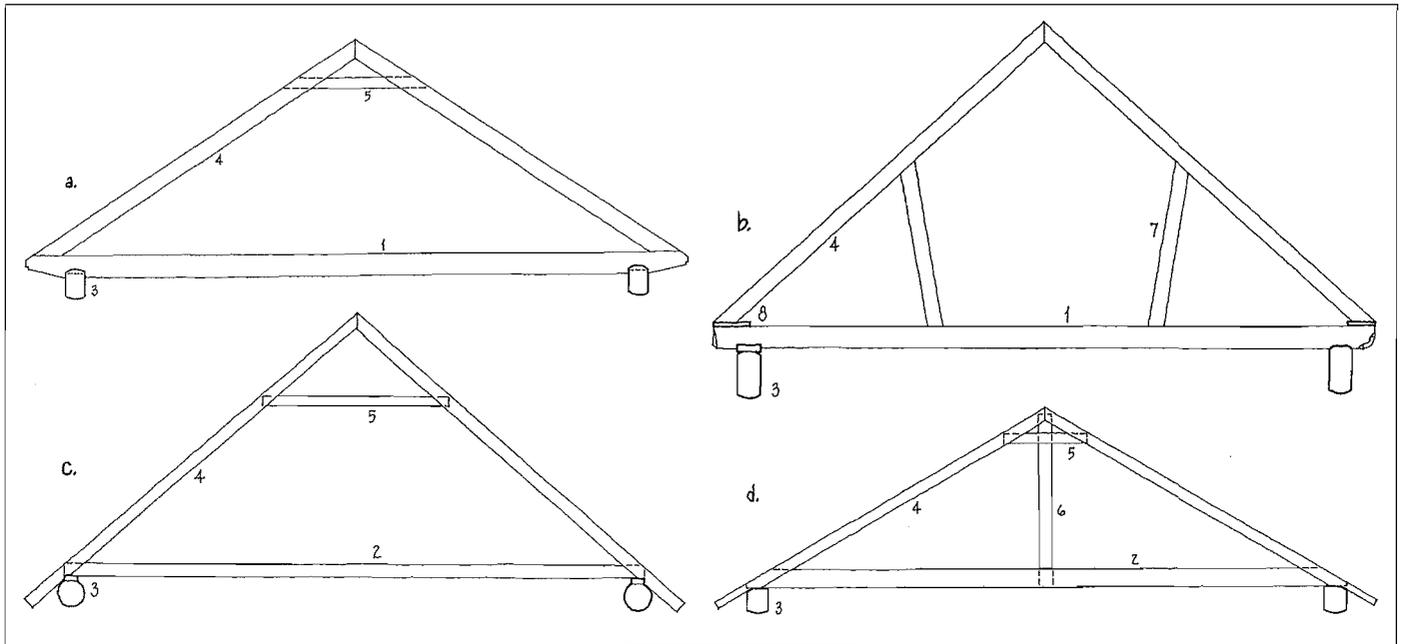


Fig.11. Roof framing variations in Czech-American timber buildings: a-b) common rafter and beam systems; c-d) rafter and joist systems. a) Růžička house, Knox County; b) Kavan house, Saunders County; c) Mladý stable, Knox County; d) Šrajer-Dryák house, Knox County. 1) tie beam; 2) joist; 3) plate log, plate, or shim; 4) rafter; 5) collar; 6) king post; 7) queen post; 8) false plate. D. Murphy



Fig.12. Veselý house, Knox County. Interior view showing the joists and rafters connecting to the lumber plate atop the plate log, the split-log filler closing the space between the roof sheathing and the plate, and the loft floorboard. Mud plaster insulation on the loft floor can be seen between the floorboards. D. Murphy, NSHS RG1763-8212/4:12

in Knox County, Nebraska, is the best standing characterization of this type built in traditional framing (Fig. 14). Horizontal frame technology also endured one shift to a new Czech-American, two-room house type that simply eliminated the redundant narrow *síň*.

In addition to the principal framing system, two other timbering methods have been recorded on hewn buildings. The most unusual was the vertical-double notching of Matěj Veselý's *trojdílný dům*, though the method was also employed on occasion where tie beams connected to walls (Fig. 15). In the Veselý house the notch was used with logs hewn flat uniformly only on the interior surfaces. Because the timbers were crowned at the corners to achieve the locking effect, full planking was not required on the outside; thick furring strips were used instead to apply finish siding to the building. As a result, some of the

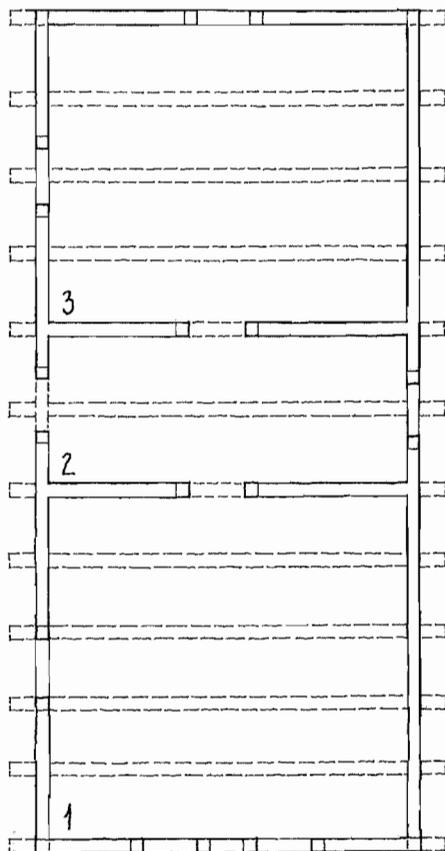


Fig.13. Růžička house, Knox County: 1) světnice, living area; 2) síň, entrance hall; 3) komora, storage chamber. D. Murphy

smaller-diameter logs were left in the round on the outside face, and only the larger ones were hewn to reduce their dimensions sufficiently to allow for the furring strips (in places a crude notch was cut out of the round face to make space for furring strips). All timbers, regardless of diameter, were hewn at the joint and on the crown to achieve a tight fit at the notch and to accept the corner furring strip (Fig.16).

Partly because the crown of the timbers was minimal, and partly because of the nature of cottonwood, especially as it has been exposed to weathering, several of the notches have split along the grain and have lost their tooth; these now appear more as lapped square notches. A few of the notches in this wall may have been

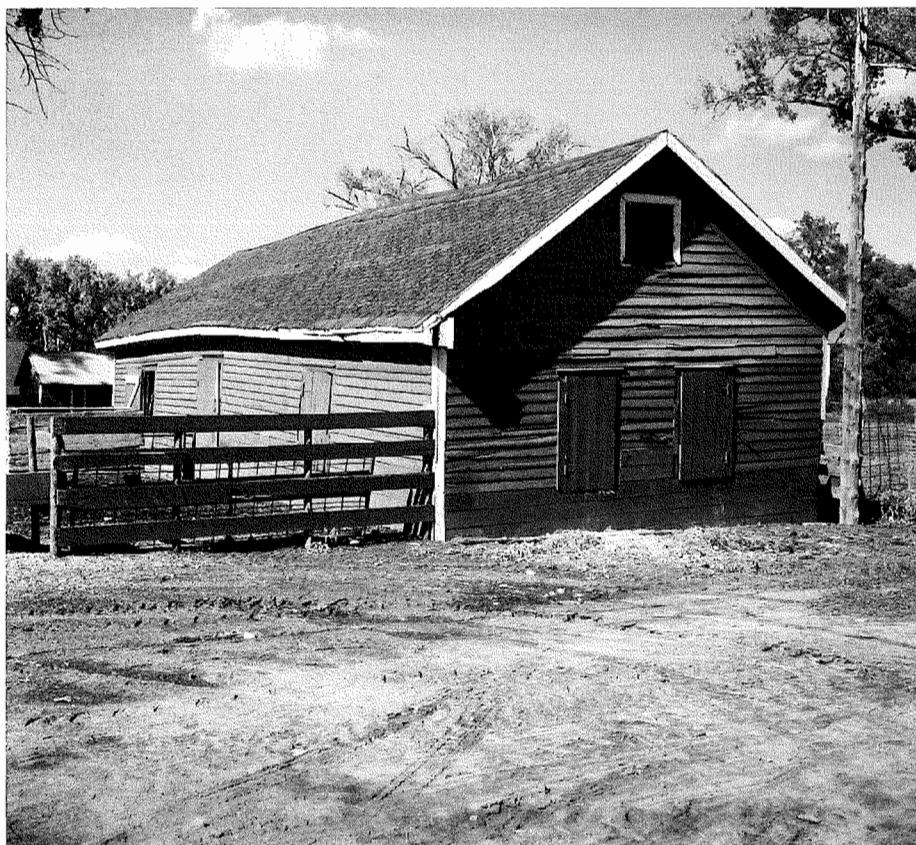


Fig. 14. Front gable and side entrance, Růžička house, a quintessential Středočeský dům (central Bohemian traditional house), now a farm shed. D. Murphy, 8009-26

built as square notches (*nárožní rovné přeplátování*), due perhaps to the length of some logs, or perhaps to an insufficient working diameter on others. Because the building is still standing, it is impossible to determine if any of the “square” notches have the diminutive mortised or dowelled connections common to traditional Czech square notching.¹⁹ Chinks, due to the unevenness of some logs, vary from none to about 10 cm in width. In cases where the chinks are minimal, the lapped notch appears similar to Northern European chinkless examples of the same technology.

The third timbering method recorded with hewn beams also has a single occurrence, and should be considered a local phenomenon. The unilateral dove-

tail (*přeplátování jednostranné úplné rybinové*) or half-dovetail notch was used occasionally in the walls of the 1873 school building in Tabor, South Dakota, in association with full dovetails (Fig. 17). One characteristic peculiar to this Czech notch is that it appears to have a more diverse expression than its American counterpart, occurring with its slope either at the top of the log, at the bottom, or even alternating from top to bottom on different faces of the wall.²⁰

The local version is also distinguished from American half dovetails in that it has a true dovetail cut on the main sloped portion of the notch; that is, it is sloped in two directions (see Fig. 2b). This feature contrasts with the more common version—both in the Czech

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Fig. 15. The Veselý house, Knox County, now a farm shed. View of the front gable and side entrance, with much of its original siding removed, and the attached cow shed at the rear. D. Murphy, 8009-22



Fig. 16. Detail of the vertical double-notch corner timbering in the Veselý house. D. Murphy, NSHS RG1763-8010/7:1

lands and in America—which cut notches sloped in only a single direction. The expression of this notch in the Tabor School suggests how the notch may have evolved and how its name may have been derived. In this sense, the common half dovetail seems to be a misnomer, as it does not share true dovetailing characteristics. It should be described as a “half V-notch,” since it literally is a notch composed of single slopes such, as would be derived by hewing only the outer half of a V-notch as described along a line running through the apex of the vee.²¹

Were it not for the pronounced slopes used in association with these notches in the Tabor school building, these unilateral dovetails might be interpreted as degenerations of full

dovetails, similar to other Czech dovetails that almost appear to be square notches due to their slight slope. The mixing of the two notches in the wall creates a complexity of expression that simply cannot be revealed by thinking in terms of notches, as such; it requires explanation in reference to each *surface* of the notch—or to each interface of wall timbers—such that we would describe twice as many interfaces as there are notches. In Fig. 17, the “half-dovetail” notch near the top of the image actually has a dovetail cut on its upper surface, and a half-vee cut on the lower surface. Describing *the surfaces* of notches in this image, bottom to top, produces: half-vee, dovetail, dovetail, dovetail, half-vee, dovetail, half-vee, (and a dovetail at the very top, not fully

visible). It is clear from this pattern that to have an entire wall of half dovetails, all surfaces must be singly-sloped or half-vee surfaces.

Coterminous with the planked-timber systems was a second employed as a minor variant for the construction of some outbuildings. This alternative system used round timbers; logs stripped of their bark with no other shaping. It was applied in the construction of a smokehouse, a chicken coop, a stable, and in two instances, to one of the cribs in double-crib log barns.

Two principal methods of corner timbering were used with the round timbers. Most common was the saddle notch (*nárožní kulaté přeplátování*), primarily with the cut placed on the bottom of the log (Figs. 2d, 18). Nearly



Fig. 17. Detail of the half-dovetail variants in the full-dovetail corner timbering of the Tabor School, Tabor, South Dakota. D. Murphy, 8511-11



Fig. 18. Detail of the saddle-notched corner timbering in the unhewn crib of the Mářšl double-crib barn, Knox County. D. Murphy, 8511-6



Fig. 19. Detail of the V-notched corner timbering in the Kounovský smokehouse, Knox County. D. Murphy.

as often Czechs used the V-notch (*zářez tvaru v*) to secure the corners. In one case the vee was quite flat; in another, quite pronounced (Figs. 2e, 19). One very interesting construction is evident in the round-log crib of the double-crib barn built by Ignác Mářšl, Jr. In what must have been a community construction “bee,” carpenters on one corner of the crib timbered with V-notches, while those on other corners timbered with saddle notches.

Minor notching variations on round timbers, worthy at least of mention, included the full dovetail, square, and half notches. Dimensional variation in timbers left in the round, especially those cut from cottonwood, seemed to require considerable contingency in timbering technique. Many of these minor constructions used a variety of notches, combining them seemingly at random, even within a single corner of the building, but they were always

tightly fitted and structurally sound.

Like their planked counterparts, round-timber buildings exhibited very narrow chinks, with the occasional exception created by crooked cottonwood. Where weather-tight closure was needed, chinks were filled with wooden staves and/or clay; they were left open or were filled only with wood staves where complete closure of the structure was not required.

Fewer of the round-timber buildings have survived fully intact. Both of the double-crib barns have lost their roof structures.²² Of those few still standing, all utilize the common American rafter system. All of the very small outbuildings have gable end doors; only one carried the logs into the gables, and this structure too, appears to have always had its current common rafter roof. While the exterior finish of hewn timber stables consisted simply of exposed logs (Fig. 20), timber houses were al-

most always finished, ultimately, with the horizontal wood siding so characteristic of American wood-framed houses of the nineteenth century.

The only known exception is the *trojdišný dšm* built by Jan Kounovský in the Pischel Creek settlement (Fig. 21). Replaced in the 1880s by a substantial brick house, the dwelling may offer an indication of the timing of the exterior finishing of other houses. Kounovský’s timber house was occupied ten to fifteen years before being replaced, while other timber houses finished with siding were occupied as dwellings as long as thirty years before being replaced. Most indicate that they were sided shortly after construction.

Kounovský’s house reveals the exterior finish of houses prior to their cladding in wood siding. Walls, of course, were left exposed, highlighted with varying widths of clay chinking between each log (Fig. 22). The gable

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Fig. 20. Hrbek stable, Knox County. D. Murphy, 8009-23

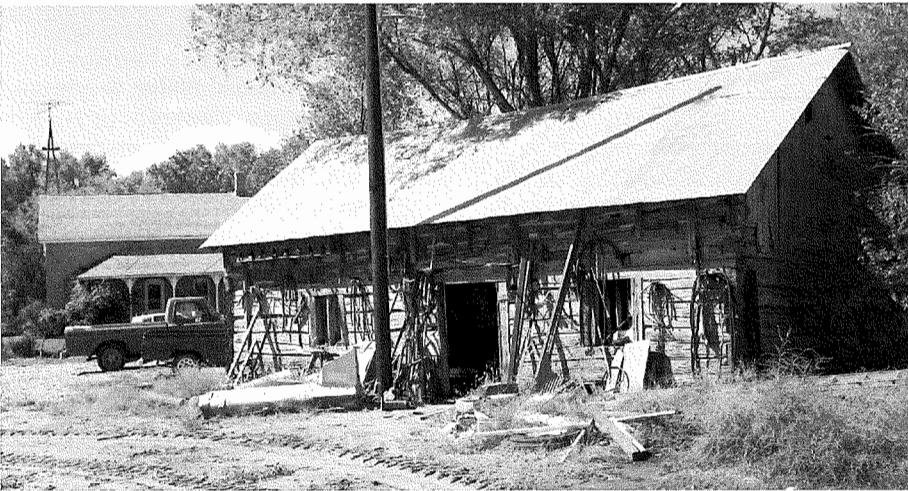


Fig. 21. Side wall and entrance, Kounovský *trojdílný dům*, Knox County, now a farm shed, showing the mortised-post door and window jambs and the dovecot under the eaves at left. The replacement 1880s brick house can be seen in the background. D. Murphy, 8009-3

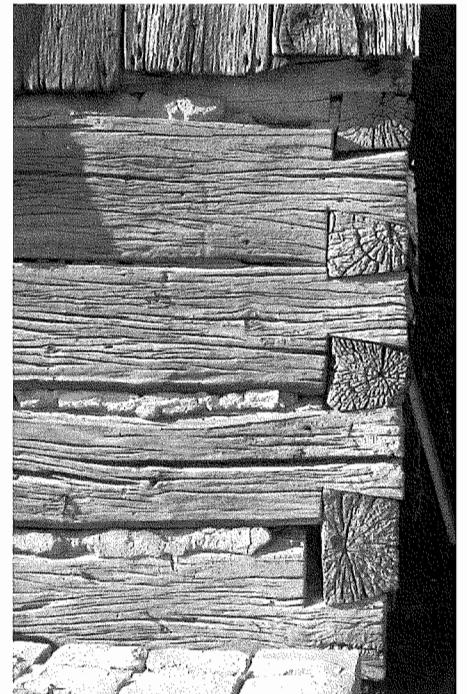


Fig. 22. Full-dovetail corner timbering and remnant flush clay chinking, Kounovský house. D. Murphy, 8511-15

ends above the timber walls were sheathed with vertical boards over dimensional lumber framing. Though the Kounovský roof has been raised, and some of the sheathing is not from the original building episode, this same

finish is used on all but one of the extant outbuildings and stables, and is evident beneath the siding applied to all the other extant timber houses. Finish siding is one of the features that most distinguishes the timber houses of



Fig. 23. Horizontal timber house number 120, Horní Heřmanice, Czech Republic. D. Murphy, 8809.CZ01.19

the Central Plains from those of the Czech homelands. There, timber houses were either left exposed (Fig. 23), often with whitewashed chinking, or were covered entirely with a thick coat of mud and/or lime plaster.

Interior finishes initially consisted of whitewashed timber walls, whose chinks were plastered smooth with mud, or were mud-plastered over the whole surface and whitewashed. Some houses, such as Josef Kastl's in Saunders County, used small wooden wedges driven into the logs for lath, a practice common in the homeland, while in others narrow willow lathes were applied diagonally to the face of the timbers. Early ceilings were exposed beams or joists, sometimes whitewashed (Fig. 24). Soon after, however, standard wood lath was typically applied to both walls and ceilings in preparation for the application of lime plasters, which were often brightly painted.

The most unusual ceiling construction recorded in Czech timber dwellings has three known occurrences; two in the

Pischel Creek settlement and one in Nebraska's central Plains settlement of Fillmore County. In these, rope was made from twisted slough grass, which was then woven, basket-like, into widely spaced laths nailed to ceiling joists. The woven surface then received a thick coat of clay plaster (Fig. 25). The installation served both as a kind of lath for the mud plaster and as ceiling insulation. One of these dwellings, the Šrajcer house at Pishelville, is still remembered as the warmest along upper Pischel Creek.²³ Other houses, following traditional practice, "plastered" the loft floor with a thick coat of mud mixed with straw (*mazanice*, see Fig. 12).

Czech settlers brought a distinct and technically advanced timber-framing system to the central Plains in the last half of the nineteenth century. The technology was characterized principally by full-dovetail corner timbering in association with two-sided hewn timbers laid up in walls with minimal to moderate chinks. Minor notches associated with hewn beams included

the true half dovetail and double notches. Lesser outbuildings were characterized by saddle and V-notches associated with unhewn timbers.

Other sophisticated technical features included timber interior partition walls notched through the exterior logs, vertically-mortised door and window jamb posts, and hewn and chamfered tie beams. This essentially ancient technology also evolved to accommodate the new materials of the American context, specifically the incorporation of dimensional lumber for roof systems and other hybridized variations on the old carpentry.

The presence of these timber structures here was not a reflection of "pioneer contingency" occasioned by a lack of material access to some other, more preferred form of domesticity; rather, they represent an initial establishment in the central Plains of a centuries-old dwelling paradigm that reflected continuing domestic preferences. Buildings like these, some upwards of three centuries old, are still occupied all over the provinces of Bohemia, Moravia, and Moravian Silesia. In the central Plains, they were built as permanent dwellings by people seeking in part to establish an old and comfortable way of life.

Early Czech farmers here established a diversified agricultural system that served subsistence needs as much as or more than the needs of the market.²⁴ Their agriculture, like other facets of their material culture, reflected an interest in establishing a familiar sense of stability in the midst of the vast changes brought about by emigration to an ecologically and ideologically different land.²⁵ In situating themselves thus—in diversified subsistence farming, in open dwellings, and in buildings made from the material of their new environment—they created new places like the old ones, in a new space, with old ways. They made place for old times in new spaces, connecting themselves with their past with modest accommodation to the new place.

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Fig. 24. Interior view of the main room of the Eckstein-Buresh house, Saunders County, showing the chamfered tie beams, board ceiling, and lath and plaster wall finish. D. Murphy, NSHS RG1763-8008/23:9



Fig. 25. Interior detail of the ceiling in the main room of the Šrajcer-Dryák house, Pischel Creek, showing the batten, woven grass, and clay plaster construction. D. Murphy, NSHS RG1763-8212/5:34

To varying degrees, and for a time, they were successful. Ultimately, however, the old forms disappeared on the central Plains, and traditional carpentry gave way to modern forms.

The forces of change were many and varied. It is likely that the riparian and bur oak woodlands could not provide enough material to sustain the old carpentry. The use of dimensional lumber roof systems on all of the timber houses suggests either a shortage of material, or are evidence of a necessary selective adoption of the products of industrialization.²⁶ And agricultural work on a scale far more vast than their old system in Europe also pressed Plains Czechs in this direction.

The demise of the old carpentry coincides with the shift from diversification to commodity agriculture, with its associated loss of the old way of life.²⁷ After this shift, new construction

was accomplished with modern light wood-framing systems. It is as though the emerging urge toward architectural modernity surpassed the typological and structural limits of the old dwelling paradigm, but this is not entirely true. The repertoire of larger traditional plans provided models that could accommodate the new desire for more rooms—separate bedrooms, sitting rooms, and even dining rooms—and these larger plans could all be built—indeed, they were in Europe—in horizontal timber framing.²⁸

The nexus of the shift to lumber, however, must be related to a generational change. Construction that succeeded the timber buildings was accomplished primarily by the daughters and sons of those who built the initial dwellings. They did not have access to the larger traditional house types; those existed only in the memories of the elders, who had grown up in the Old Country. The new generation grew up here, submerged in the contexts of the new land; for them the large wooden frame houses built by their non-Czech neighbors were the models of modernity. For them as well, the old carpentry died with the completion of the old buildings, thirty to forty years earlier. The new materials and the new carpentry were far more accessible and much easier to learn (Fig. 26). The old system passed with the elders who held its traditions.²⁹

Notes

I would like to thank the many owners—too numerous to mention individually—of the buildings discussed here who so generously allowed me access to these structures. Thanks, also, to Curt Peacock, Society artist, who found and reported the first of these buildings to me in the 1970s, and unwittingly started my long-term odyssey with Czech buildings. Thanks as well, posthumously, to G. Hubert Smith for depositing a copy of Henry Glassie's masters thesis in our library; this thesis first opened the doors to foreign sources that became indispensable to the interpretation of these structures. Finally and more immediately I want to thank Steve Holen, John Carter, and Roger L. Welsch for many invigorating discussions about, and field experi-



Fig. 26. The second generation, light wood-frame house on the Mladý farm, Pishelville. D. Murphy, 8212-20

ences with, log buildings, and the former two for valuable field assistance in the Pischel Creek settlement. Last, but certainly not least, thanks to Carolyn Torma and John Rau, who generously shared data for and field assistance with the South Dakota buildings. This article is an expansion of a paper delivered at the Czechoslovak Society of Arts and Sciences, *Společnost pro vědy a umění* 2001 North American Conference, University of Nebraska-Lincoln, August 2, 2001.

¹ For American log buildings in Nebraska, see Roger L. Welsch, "Nebraska Log Construction: Momentum in Tradition," *Nebraska History* 61 (1980): 310–35.

² For the latter, see especially Fred Kniffen and Henry Glassie, "Building in Wood in the Eastern United States," *Geographical Review* 56 (1966): 40–66. Exemplary of the former include Henry Glassie, "The Types of Southern Mountain Cabin," in *The Study of American Folklore*, 3rd ed., ed. Jan H. Brunvand (New York: W.W. Norton, 1986), 530–62, esp. pp. 537–39 and Fig. 6; Matti Kaups, "Log Architecture in America: European Antecedents in a Finnish Context," *Journal of Cultural Geography* 2 (1981): 131–53; and Thomas Carter, "North European Horizontal Log Construction in the Sanpete-Sevier Valleys,"

Utah Historical Quarterly 52 (1984): 50–71. Other excellent studies of American log building include Warren E. Roberts, *Log Buildings in Southern Indiana*, (Bloomington: Trickster Press, 1996); Milton B. Newton, Jr. and Linda Pulliam-Di Napoli, "Log Houses as Public Occasions: A Historical Theory," *Annals of the Association of American Geographers* 67 (1977): 360–83; and Charles E. Martin, *Hollybush: Folk Building and Social Change in an Appalachian Community* (Knoxville: University of Tennessee Press, 1984). See also the early studies by Henry C. Mercer, *The Origin of Log Houses in the United States* (Doylestown, Pa.: Bucks County Historical Society, 1976), and Harold R. Shurtleff, *The Log Cabin Myth* (Gloucester, Mass.: Peter Smith, 1967).

Reference also must be made to the study by geographer Terry Jordan, *American Log Buildings: An Old World Heritage* (Chapel Hill and London: University of North Carolina Press, 1985). While I remain unconvinced of the conclusions reached in this work concerning the antecedents of American forms of horizontal timber carpentry, readers should at least be aware of the material covered in Chapter 5 concerning the German-Slavic borderlands. I will not pursue nor belabor the antecedence question, but reference to this work will occasionally be

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made and readers may wish to compare it with the Czech materials presented here, and with Kniffen and Glassie, "Building in Wood," and Henry Glassie, *Material Culture* (Bloomington and Indianapolis: Indiana University Press, 1999), 371–72 nn.

³ With the exceptions noted in *Ibid.*

⁴ I use the term "false notching" (or false corner timbering) differently than other authors. Here false notching refers to any corner timbering that does not provide locking *by itself*. Cf. Kniffen and Glassie, "Building in Wood."

⁵ Václav Frolec and Josef Vařeka, *Encyklopedie lidová architektura* (Prague: Nakladatelství technické literatury a Vydavatel'stvo technickej a ekonomickej literatury, 1983), 184–85; Kaups, "Log Architecture," 133–36.

⁶ Frolec and Vařeka, *Encyklopedie*, 184–85; Václav Mencl, *Lidová architektura v Československu* (Prague: Academia; Nakladatelství Československé akademie věd, 1980), fig. 1372.

⁷ Robert B. Kaul, "Vegetation of Nebraska (Circa 1850)," (Lincoln: Conservation and Survey Division, and Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, 1975).

⁸ The additional availability of limestone in the former settlement occasioned a preference for that material, just as it had begun to supercede wooden building in the Old Country for fire safety reasons in the eighteenth century.

⁹ It is as yet undetermined what species of wood was used for the construction of these, or from whence it came; it is a soft, straight-grained and clear wood not native to the Plains. Master carpenter Václav Bulín built one of the houses for himself; he hailed from the Wisconsin Czech settlements. His brother owned a lumberyard in Milligan, and it is likely the timbers arrived here through his connections. The timbers were milled to 15 cm square sections and were placed with 5 cm spacers in the wall; otherwise the walls were finished in the traditional way with clay chinking and hand-cut full dovetails at the corners.

¹⁰ Frolec and Vařeka, *Encyklopedie*, 36.

¹¹ Jordan, *American Log Building*, 22, 92–94, 135, Figs. 4.8 and 5.19, noted only few, widely scattered examples of corner-post construction—these along the Czech-Silesian borderlands, in the Black Forest, and in Switzerland.

¹² The appearance of chinking when the tops and bottoms of the timbers actually touch has also been called false chinking; see *ibid.*, 126–29.

¹³ *Ibid.*, Fig. 5.5, records an instance of this technique near Litomyšl, but it is doubtful if it can be generalized to all Czech chinking; cf. Fig. 5.11.

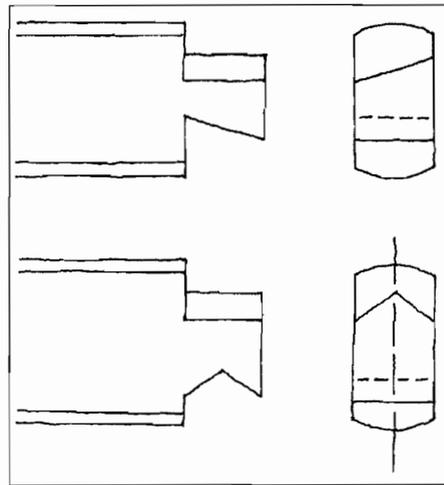
¹⁴ Since these notches were at mid-wall, rather than at the corners, the V and half-V would act as true notches.

¹⁵ Josef Vařeka, "Podíl Čechů na výstavbě

amerického venkova v Nebrasce (Podle amerických pramenů)," *Češi v cizině* 4 (1989): 103–109.

¹⁶ PhDr Josef Vařeka and PhDr Alena Plessingerová, personal communication, Prague, ČSSR, September 18–19, 1988.

¹⁷ It is proper to understand most traditional Czech houses as oriented with the narrower gable end toward the "front," or as the main facade, rather than the more usual English-American way of perceiving the long eave side of the house, with the door, as the front of the house. Doors in Czech houses then, were in the side of the house rather than the front. See David Murphy, "Czechs," in *America's Architectural Roots: Ethnic Groups*



Common half-dovetail notch. (see note 21).
D. Murphy

that *Built America*, ed. Dell Upton (Washington: Preservation Press, 1986), 115–11. This is discussed in more detail in David Murphy, "Podstatné rysy Českoamerické krajiny," trans. Ivan Dubovický, *Český lid* 85:1 (1998): 42–44.

¹⁸ Built in two episodes, the plan is a variation on the traditional *siň-světnice* type; a detailed discussion is included in the author's 1997 report to the Nebraska State Historic Preservation Office, on file in site MD00-033, NSHPO, Lincoln.

¹⁹ Frolec and Vařeka, *Encyklopedie*, 232.

²⁰ Cf. *ibid.*, and Jordan, *American Log Buildings*, 131–32, and Figs. 5.3, 5.21, and 5.22.

²¹ Though it makes sense to describe the common half dovetail notch as a half-vee (see diagrams above), and it can be seen as a simplified V-notch, it also can be seen as a simplified true dovetail (cf. Figs. 2a, b). One might surmise that the nomenclature of the "half dovetail" is derived from a variation on full dovetailing as in the Tabor School, and that the variation, modified into cuts of single slope, then came to be a notch in its own right. Cf. *ibid.* The diagram illustrates the common half dovetail above and the common

V-notch below; the dashed line through the apex of the vee shows the more pronounced morphological similarity of these two notches.

²² The old Václav Holoun timber building in Valley County is not counted here. Built as a double-crib construction (two log cribs spaced apart a distance equal to the size of the two cribs, creating a three-celled structure under a single roof), one of the "cribs" was built for and originally used as a one-room dwelling. Both "cribs" were built with planked timbers and full-dovetail notches unlike the two double-crib barns, which each had one saddle-notched, round timber crib and one full-dovetail, hewn-timber crib.

²³ William Vesely, Pishelville, Nebraska, personal communication, December 8, 1982. "Pischelville," an anglicized spelling used by the post office, is a germanized version of the Czech, *Pišl*. I have retained the local spelling in the name of the creek, and the anglicized spelling for the town.

²⁴ Štěpánka Korytová-Magstadt *To Reap a Bountiful Harvest: Czech Immigration Beyond the Mississippi, 1850–1900* (Iowa City: Rudi Publishing, 1993), 77–80.

²⁵ Glassie, *Material Culture*, e.g. 12–20; cf. David Murphy, "Jejich Antonie: Czechs, the Land, Cather, and the Pavelka Farmstead," *Great Plains Quarterly* 14 (1994), esp. 95–101.

²⁶ Closely spaced dimensional lumber rafters were an integral part of the American wooden shingle-on-sheathing roof system. So different from old Czech roofs, the widely spaced rafters of the old system were incompatible with the new, so the new system was fitted to the old walls.

²⁷ Korytová-Magstadt, *To Reap a Bountiful Harvest*, 77–80.

²⁸ See Sally McMurry, *Families and Farmhouses in Nineteenth-Century America: Vernacular Design and Social Change* (New York and Oxford: Oxford University Press, 1988) for the modern farmhouse design priorities that were promoted by reformers, architects, and progressive agriculturalists in the late nineteenth century.

²⁹ This second generation of construction by Czechs, however, was often accomplished with only a tentative accommodation to the modern world, in spite of the modern form of construction. Modern-looking houses built of light framing were often still of open plans, with entry directly into kitchens and dining rooms, and the cavity walls of insubstantial lumber houses were prominently filled with puddled clay or clay bricks; see the brief discussion in David Murphy, entry 3.VI.5.c, "Czech (Great Plains)," in *Encyclopedia of Vernacular Architecture of the World*, ed. Paul Oliver (Cambridge UK: Cambridge University Press, 1997), 1880, and the entry "Czechs," in *Encyclopedia of the Great Plains*, ed. David Wishart, forthcoming. Again compare with Murphy, "Jejich Antonie," 89–95.